REMARKS

Claims 1-4 are all the claims pending in the application. Applicants add claim 4 to further define the invention as discussed in further detail below.

Drawings

The drawings have been objected to by the Examiner for failing to show every feature of the claimed invention. Applicants submit a Request for Approval of Proposed Drawing herewith in which new Figure 6 is added and Figure 1 is amended. This Figure is believed to obviate the drawing objections. Applicant notes that new Figure 6 shows the movements of the injector means and the heating means.

Specification

The Examiner objects to the specification for failing to provide proper antecedent basis for the claimed subject matter. Applicants submit that the specification properly supports the subject matter of claim 3. In particular, page 4, line 33 to page 5, line 11, describe the axes and planes recited in claim 3, as further explained below with respect to the indefiniteness rejection.

In addition, Applicants amend the specification to include a description of new Figure 6.

§ 112 Rejection

Claim 3 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Examiner asserts that it is contradictory for the heating and injector means to be in a plane and at a fixed angle and moved, because if they are moved their axes would fail to remain in the plane. Applicants respectfully disagree with this assertion.

As discussed on page 5 and recited in claim 3, the heating means has a main axis in a plane substantially perpendicular to the longitudinal axis of the preform. This is illustrated in Figure 4. The injector means has a main axis at a fixed angle to the main axis of the heating means (the main axis of the injector means protrudes upwards out of the page in Figure 4). Again, this axis of the injector means is in a plane substantially perpendicular to the longitudinal axis of the preform. The injector means and the heating means move in a direction parallel to the axis of the preform, since they move along the length of the preform. This movement is not contradictory with being in a plane perpendicular to the longitudinal axis of the preform. Thus, claim 3 is definite.

Prior Art Rejections

Claims 1-3 are rejected under 35 U.S.C. § 102(b) as being anticipated by Powers (4,568,370).

Claim 1 recites, *inter alia*, that the relative positions of heating means and the injector means are adjusted. In other words, the positions of the heating means and the injector means are adjusted with respect to each other.

This feature is illustrated in Figs. 2-5. In particular, the injector means (shown by the 5a) is offset from the longitudinal axis of the torch 4, so that the cone 14 of deposition gases resides entirely within the hot area ABCD. Therefore, there is no cold area of the cone (see pages 8 and 9 of specification).

Powers fails to disclose this feature. Instead, Powers merely shows that a plurality of burners (40, 41) are used to deposit the outer region of the graded index core (col. 6, lines 34-

45), and that these burners are moved relatively along the length of the core region 46 (col. 9, lines 14-68). This reference completely fails to teach or suggest the relative positioning of components within the burners. Thus, this reference fails to teach or suggest the relative positioning of the heating means with respect to the injector means.

In view of the foregoing, claim 1 is not anticipated by Powers. Moreover, there is no teaching or suggestion for modifying Powers to arrive at the claimed invention. Thus, claim 1 is patentable.

The remaining rejections are directed to the dependent claims. These claims are patentable for at least the same reasons as claim 1, by virtue of their dependency therefrom.

Also, Applicants add claim 4 to further define the invention. In particular, claim 4 recites that the heating means has a longitudinal axis and that the injector means is offset from this axis by a predetermined distance. This claim is patentable for at least the same reasons discussed above regarding claim 1.

Conclusion

Reconsideration and allowance of all claims are respectfully requested in view of the following remarks. In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned at the telephone number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification has been amended as follows:

Page 6, please insert the following paragraph after paragraph 5:

Figure 6 is another diagrammatic view of a plasma surfacing system in which the movement of the heating and injection means is shown.

Page 6, paragraph 6 (after DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT):

[Figure 1 is a highly diagrammatic representation of] Figures 1 and 6 show a plasma surfacing system including an enclosure 1 which has a transparent window 2, a preform 3 which is seen end on (in Fig. 1) and onto which are directed a plasma torch 4 which constitutes the heating means in accordance with the invention and a nozzle 5 feeding surfacing grains which has an orifice 5a and constitutes the injector means according to the invention. Outside the enclosure 1 is a CCD video camera 6 behind the window 2 and pointing toward the preform 3, which has a longitudinal axis X. It provides a measurement of the diameter of the preform at the location at which it points in the form of a value transmitted by a link 7 to a device 8 controlling the surfacing process. The device 8 receives over a multiple link 9 other information on surfacing process conditions. Under the control of an internal program controlling the surfacing process, and for a constant flowrate of the grains, the device 8 provides on an output link 10 feeding a control device 11 a command which positions the nozzle 5 relative to the torch 4 and

the preform 3 by moving the nozzle 5 along an axis parallel to the longitudinal axis X of the preform 3. The reference value is that for which the nozzle 5 and the torch 4 are in a common plane substantially perpendicular to the axis of the preform. The device 8 also supplies on a multiple output link 12 other command values determining other aspects of the control process.

Page 7, please insert the following paragraph before paragraph 1:

As shown in Figures 1 and 6, the torch 4 has a main axis Y in a plane substantially perpendicular to the longitudinal axis X of the preform 3. The nozzle 5 has a main axis Z at a fixed angle α to the main axis Y of the torch 4, in a plane substantially perpendicular to the longitudinal axis X of the preform 3.

Page 7, paragraphs 1 and 2:

All the components of the system shown in figure 1 are well known to the skilled person. Other components which are not shown in detail are equally well known. Thus means for supporting the preform 3 with rotary and translatory drive parallel to the longitudinal axis of the preform 3, and means for evaluating the angular position of the preform 3 and the longitudinal position of the carriage are shown in Figure 6 and described in European patent application EP 0 440 130 A1, for example. According to the invention, the carriage supporting the nozzle 5 and the torch 4 also includes internal means for supporting the nozzle 5 with translatory drive for positioning the nozzle 5 relative to the torch 4. In a manner that is well known in the art, all these means are used to move the preform 3 away from the torch 4 as the preform 3 grown larger. The camera 6 is pointed at successive locations of the preform 3 along a measurement

path by means which could take the form of a second carriage, movement of which is coupled to that of the first carriage, also as in the prior art.

The plasma surfacing is effected by alternating passes from right to left and from left to right during which the plasma torch 4 and the nozzle 5 are swept along the length of the preform 3 as shown in Figure 6. In accordance with the invention, the position of the nozzle 5 relative to the torch 4 is preferably changed at each change in the direction of translatory movement of the torch 4 relative to the preform 3 at the end of a pass. In figures 2 and 3, which are described later, the position of the nozzle 5 relative to the torch 4 in the prior art is typically fixed for every pass and therefore exactly the same regardless of the direction of translatory movement of the preform 3 relative to the torch 4. In figures 4 and 5, which are described later, the position of the nozzle 5 in accordance with the invention is different for each direction of translatory movement of the preform 3 relative to the torch 4 and is modified on each change of direction of translatory movement, but can also vary during the process, being slaved to the diameter of the preform.

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) A method of fabricating an optical fiber preform including a step of outside deposition of silica possibly doped with at least one dopant by injecting at least one substance in the form of silica or a precursor of silica in the vicinity of a heating area created by heating means during at least one pass of injector means and said heating means along a longitudinal axis of said preform during which the relative positions of said injector means and

said heating means are adjusted with respect to each other so that said silica is deposited in said heated area regardless of the position of said heating means.

Claim 4 is added as a new claim.